

Impact of Proactive Land Acquisition Strategy (PLAS) Projects on Human Capital Livelihood of Beneficiaries in the Dr. Kenneth Kaunda District in South Africa

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Abstract

This study assessed the effect of PLAS projects on human capital aspects of beneficiaries in Dr Kenneth Kaunda District Municipality. Out of 97 beneficiaries, stratified random sampling technique was used to select 54 from all the 36 PLAS projects in the District. Data was collected through the use of a structured questionnaire and analyzed using version 21 of Statistical Package for Social Sciences (SPSS) with frequency count, percentage and Wilcoxon test on “before” and “after” basis. The results show that majority of the farmers were above 50 years of age; 18% do not have formal education; land sizes of beneficiaries ranged between 55.7 and 1500 hectares; and majority of respondents had farming experience of more than 10 years. The results indicate that participation in the PLAS projects have impacted positively on skills and knowledge of the farmers in the areas of farm production, finance, marketing and veldt management. The results of the Wilcoxon sign rank test on human capital show that significant difference exists in human capital among beneficiaries “before” and “after” participation in PLAS projects for all 21 variables considered. This implies that significant number of the respondents have acquired various human capital skills after their participation in the PLAS projects.

Keywords: land reform, beneficiaries, projects, livelihood, human capital, South Africa

1. Introduction

The objectives of South African land reform programme include redressing the injustices caused by past land reform policies, supplying both residential and productive land for the poorest section of the rural population, helping to raise incomes and productivity through the provision of support services and building the economy by generating large scale employment and increasing rural incomes. The three main pillars of the South Africa land reform programme are Land Restitution, Land Redistribution and Tenure Reform. Land Restitution deals specifically with historic right in land. It aims at returning land to people who were dispossessed as consequences of legislation such as the Native Land Act of 1913 and the Native Trust and Land Act of 1936. People who had been forcibly removed from their land during period of 1913 to 1994 were entitled to submit applications in order to get back their land. Tenure Reform deals with forms of land holdings. The programme aims to introduce new systems of land holdings, land rights and forms of ownership while Land Redistribution Programme specifically aims at transforming the racial patterns of land ownership. Regarding agriculture, the Land Redistribution Programme targeted to redistribute 30% of agricultural land by 2014 (ANC, 1994). Between 1994 and 1999, the land redistribution programme was implemented through the Settlement/Land Acquisition Grant (SLAG). SLAG, the first programme to support land redistribution provided grants of R16 000 to qualified persons to purchase and develop agricultural land. Households that were earning less than R1 500 per month were targeted (DLA, 1997).

There were three main problems cited with SLAG (DLA, 2001). First, because of the small size of the grant, groups were too large and frequently crippled by internal conflict and often, had members whose only function was to boost the numbers receiving grants without having any meaningful role in the project. Second, projects took too long to deliver; to some extent because they did not rely sufficiently on the applicants' own initiative and effort, and there was insufficient coordination between the provincial Land Affairs branches (known as

Provincial Land Reform Offices) and the provincial Departments of Agriculture. There was also insufficient post-transfer support to projects. The third concern was that too many redistribution projects were not economically viable, and linked to this redistribution did not appear to provide a stepping stone into medium or large scale commercial farming. The Settlement/Land Acquisition Grant's procedures were overwhelmingly bureaucratic and, consequently, remarkably slow. As a result, by the end of 2000, it failed to deliver number of hectares that was to make it possible to meet the land redistribution target for the remaining years (up to march 2014). MALA (2005) reported that SLAG failed to make significant contributions to the development of semi-commercial and commercial black farmers. This "led to very little impact on rural employment creation or transformation of holding of agricultural land patterns". As a result, SLAG was halted in 1999 by the Department of Land Affairs (DLA) (now called Department of Rural Development and Land Reform) after policy review.

Land Redistribution for Agricultural Development (LRAD) was then introduced in 2001 to replace SLAG. LRAD aimed to improve nutrition and incomes of the rural poor, stimulate growth from agriculture, empower beneficiaries to improve their economic and social well-being, and to enable those accessing agricultural land in communal areas to use their land effectively and efficiently (DLA, 2001). LRAD was designed as a market-driven programme, providing larger grants to emerging black farmers with the aim of creating 70 000 black commercial farmers within 15 years. LRAD was seen as a programme for advancing the policy objective of distributing 30% of commercial agricultural land to previously disadvantaged persons by March 2014. The programme was also highly criticised for its slow pace in transferring land to previously disadvantaged people. Lack of access to capital and market, poor infrastructure, lack of mentorship and limited financial management skills contributed to the failure of LRAD projects. These challenges needed to be addressed at both the programme and projects level. Mostly, beneficiaries of land reform are resource-poor; most of them did not have money left for input and operations after the LRAD grant to purchase land and were not provided with start-up capital or soft loans. As a result, most of the lands were left unused and underutilised. Funds from the government were not allocated according to the needs of the farmers. All these challenges led to the gradual phasing out of the programme from 2007 to 2010 (DRDLR, 2011).

The Proactive Land Acquisition Strategy (PLAS) was launched in 2006 to replace LRAD. PLAS aims to support local government develop area-based planning and improve coordination among the institutions responsible for land reform. The objectives of PLAS are to contribute to growth, employment creation and equity (DLA, 2006). The new strategy aimed at speeding up the transfer of land through the proactive acquisition of the land in the market by the government for redistribution purposes. Under PLAS, the land is only permanently transferred to beneficiaries after they have demonstrated their production capabilities in three seasons of monitoring by Agricultural officials (DLA, 2008). In 2008, the DRDLR introduced the "use it or lose it" principle which enables the government to repossess the land it judges as not being used productively. By not transferring the land directly to the beneficiaries, the government pressurises beneficiaries to use land according to government's command to avoid dispossession. For the government, productive use of the land means producing for the markets. The above scenarios of SLAG and LRAD posed a threat to the national food security/ poverty and contributed to loss of farm jobs.

The purpose of the Land Redistribution Programme which is now driven by PLAS is to provide the poor with land for residential and productive purposes in order to improve their livelihood (DLA, 1997). Ellis (2000) defines livelihood as a particular way of living. He points out that livelihood system may include farming activities and income, non-farming activities and sources of income, off-farm activities, non-income related activities and non-activity related sources of income. According to Chambers and Conway (1992), "a livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural base". Generally, livelihood impact assessment of projects/programme focuses on what happens on the livelihood of beneficiaries after participating in the projects with respect to natural, financial, social and human capital. However, the main objective of this study was to assess the impacts of land reform agricultural projects under the PLAS programme on the human capital livelihood of beneficiaries in the study area after about seven years of implementation. Human capital represents the skills, knowledge, capacity to work and good health that together enable people to pursue different livelihood strategies and achieve their livelihood outcomes. Human capital is important in its own right; health, knowledge and skills help create sustainable livelihoods. Human capital is also necessary to be able to make use of the other types of assets (political, physical, financial, natural and social capital). It was therefore hypothesized that there was no significant difference on the human capital livelihood (knowledge, skills/capacity) of beneficiaries "before" and "after" participating in PLAS Land Reform Agricultural Projects.

What happens after the delivery of land to the beneficiary is one of the most important and critical aspects of

Land Reform Programme. Government officials, land reform beneficiaries, policy-makers, civil society and other relevant stakeholders need to engage in these issues because in many cases, the success of land reform is judged by what happens when land is given to the less fortunate. If land reform programme is well planned and implemented, it has the potential to improve the livelihoods of beneficiaries, stabilize food security of the nation, create more jobs, alleviate poverty and contribute to local economic development.

Available literature indicates that there is a very strong view or perception that many land reform projects were implemented in a way that reduced their possible impact on equity and efficiency. However, according to Deininger (2003) there is growing evidence from all over the world that redistributive land reform helped reduce poverty, increase efficiency and establishes the basis for sustainable growth. In the Philippines, land reform beneficiaries have invested more in their children's education than non-beneficiaries and increased their levels of assets at about three times the rate of non-beneficiaries and this plays a major role on sustainable livelihood of those who are direct beneficiaries of land reform. Implementation of land reform has proven to have the potential of improving livelihood as it targets the most unproductive areas, thus leading to considerable productivity increases. In Brazil, land reform has proven to be economically viable, having a scope of increasing beneficiaries' income up to 5 fold (Buinainain et al., 1998). Deininger and May (2000) state that in South Africa, land reform has experienced a lot of problems on implementation but it offers an opportunity to the poor, hence playing a major role on improving the livelihoods of previously disadvantaged people.

Recent development of endogenous growth theories has shed new light on the role of human capital as a source of sustained growth (Barro & Sala-I-Martin, 1995). Penda (2012), states that human capital plays a critical role in economic growth and development because human beings occupy the center of production, distribution and consumption chain. From a macroeconomic perspective, the accumulation of human capital productivity, facilitates technological innovations, increases returns to capital and makes growth in agriculture more sustainable. The importance of human capital development in agriculture cannot be over-emphasized. According to FAO (1984), with the shrinking of per capita agricultural resources following demographic growth, with the agricultural labour force in the developing countries projected to continue at positive (though declining) growth rates and with the share of young people in the total also continuing to grow, the task of upgrading the literacy, the skills and other capabilities of the agricultural people is enormous, for coping with both the increases in numbers and the backlog inherited from the past. The study explains further that the increasingly binding character of natural resource scarcities imposes severe limits on the extent to which production increases can be achieved through expansion of extensive agriculture. The generation and diffusion of technology and management capabilities for more intensive and modernized agriculture and supporting services become imperative. This can only be achieved through the upgrading of the quality of human resources employed in agriculture. Agricultural skills training improves farming methods and techniques, increases production efficiency and income, better levels of living and lifting of the social and educational standards of rural life (FAO, 1984).

Huffman et al. (2007) reviews existing literature, identifying the contribution of agriculture, schooling, and nutrition to economic growth and development over time and across countries. Particular attention is paid to the roles of improvements in agricultural technology and of the human capital of farmers and farm people. The study showed that improvements in agricultural technologies improve labor productivity and create surplus agricultural labor that can provide workers for the growing urban areas. The induced improvements in the skill level of a population have major implications for raising living standards, improving health standards, and altering time allocation decisions.

Education and skills training in agriculture are extremely important and cannot be denied (Trede & Whitaker, 2000). According to Adesoji et al. (2006), successful and result-orientated farming requires the skill and knowledge of the farmers, which can only be attained/ achieved through the right training. Adesoji et al. (2006) further stated that training is acquisition of the best way of utilizing knowledge and skill. Thus, training is an essential resource, which will direct knowledge and skill towards production. Faure and Kleene (2004) indicate that there is a need for new information and training facilities for farmers to enable them improve their management capacity, taking into account the technical, organizational, economic and financial aspects of farming. Thus, the high risk and high technology nature of business requires sound business management skills. Knowledge of farm management principles provides farm operators with a basis for sound decision-making and helps them to solve economic problems associated with maximization of returns and minimization of costs (Al-Rimawi et al., 2004).

2. Methods

The study was conducted in Dr. Kenneth Kaunda District Municipality of the North-West Province. The main economic activities in the district are mining and agriculture. The Agriculture in the district produces mainly crops and livestock. Daily temperatures range from 17 °C to 31 °C in the summer and from 3 °C to 21 °C in the winter. Annual rainfall totals about 360 mm (about 14 in), with almost all of it happening during the summer months, between October and April. The majority of its 599,674 people speak Setswana. The district is divided into four local municipalities which are Ventersdorp, Tlokwe, City of Matlosana, and Maquassi Hills. The district is surrounded (clockwise) to the west by Bojanala Platinum District Municipality, to the North West by Rand District Municipality (Gauteng province), to the east by Sedibeng District Municipality (Gauteng province), to the east by Fezile Dabi District Municipality (Free State province), to the south-east by Lejweleputswa District Municipality (Free State province), to the south by Dr. Ruth Segomotsi Mompati District Municipality, to the south-west by Ngaka Modiri Molema District Municipality of the North-West Province (SSA, 2003).

The population of the study included all 97 beneficiaries of all 36 PLAS projects in the district municipality. Data was collected from all four local municipalities existing within the District Municipality. Since there were only 36 PLAS land reform projects in the district, and considering large sample advantages in statistical analysis, fifty-four out of 97 beneficiaries were selected from all projects through stratified random sampling from the four local municipalities in the district. All the 54 beneficiaries sampled were interviewed. A structured questionnaire with both closed and open-ended questions was developed based on the objectives of the study to collect data from the land reform beneficiaries. The researcher conducted face-to-face interviews in order to be able to explain the questions thoroughly to respondents. This enabled the researcher to collect some information which was initially not covered in the questionnaire.

Data collected in January 2014 was sorted, coded and analysed using version 21.0 of Statistical Package for Social Sciences (SPSS). Demographic and socioeconomic factors of beneficiaries' perception towards the impact of land reform projects on their human capital livelihood and constraints on the PLAS projects were analyzed and summarized using frequency count, percentage and tables. A Wilcoxon Sign-rank Sum Test was used to analyse the "before" and "after" effect of PLAS land reform projects on human capital livelihood of the beneficiaries. The Wilcoxon Signed-rank Sum Test applies to two-sample designs involving repeated measures, matched pairs, or "before" and "after" measures like the t-test for correlated samples. The Wilcoxon Signed-rank Test is a non-parametric version of a paired samples t-test. The Wilcoxon Signed-rank Sum Test as used by the researcher does not assume that the difference between the two variables is interval or normally distributed but assumes that the difference is ordinal. The test is robust and highly efficient for moderate to heavy tailed underlying distributions. In particular, it is a real improvement over the sign test and is almost fully efficient when the underlying distribution is normal. Wilcoxon Signed-rank statistics can be computed as sign statistic of the pair-wise averages of data (Hettmaspherger et al., 1997). The framework of the human capital livelihood impact indicators and their measurement are presented in Table 1. The parameters estimated included F, N, Z statistics and P-values. The F parameter indicates the number or percentage of participants regarding their indication about the respective human capital variables as either low or high before (pre) and after (post) participating in PLAS projects; N is the total number of observations that were made; the Z values are indications of whether there are significant increases in the respective human capital variables among participants from time 1 (i.e. *pre*) to time 2 (after participation in PLAS projects *-post*); the Z statistic is used to report Wilcoxon signed-ranks test; while the p-value is a measure of the asymptotic significance (2-tailed) value. For the problem above the null and alternative hypothesis are spelled out below:

H_{null} : There will be no difference in the respondents' human capital pre and post participation in PLAS projects.

H_{alt} : There will be difference in the respondents' human capital pre and post participation in PLAS projects.

Table 1. Framework of the human capital livelihood impact indicators and their measurements that were used in the Wilcoxon signed-rank analysis

Human capital	Before the project		After the project	
	High F (%)	Low F (%)	High F (%)	Low F (%)
Vocational skills	“	“	“	“
Project management skills	“	“	“	“
Veld management skills	“	“	“	“
Grazing management skills	“	“	“	“
Vegetable management skills	“	“	“	“
Grains management skills	“	“	“	“
Livestock management skills	“	“	“	“
Poultry management skills	“	“	“	“
Piggery management skills	“	“	“	“
Disease treatment skills	“	“	“	“
Water management skills	“	“	“	“
Soil management skills	“	“	“	“
Food security	“	“	“	“
Level of education	“	“	“	“
Innovative and creative thinking	“	“	“	“
Knowledge of farm management	“	“	“	“
Decision-making skills	“	“	“	“
Record keeping skills	“	“	“	“
Ability to sell product	“	“	“	“
Financial management skills	“	“	“	“

Source: Own calculations based on data from the study (2014).

3. Results and Discussion

3.1 Demographic Characteristics of Respondents

The demographic characteristics of respondents are presented in Table 2. Since a sample does not include all members of a population, statistics on the sample, may generally differ from parameters on the entire population. However, the study used 54 out of a population of 97 beneficiaries in order to minimize the sampling error. Generally the higher the sample size, the lower the sampling error. The results in Table 2 show that most (54%) of respondents were above 50 years of age and 7.5% were less than 30 years of age. The youngest among the sampled farmers was 24 years of age while the oldest was 70 years of age. The small percentage of young people participating in PLAS projects may be as a result of their perception that agricultural related projects are for old people. This finding poses a threat to future of agriculture and national food security as most farmers in the country are old. This finding is consistent with that of Anyanwu (1992) who stated that younger men have no interest in agricultural activities. Hence, most of them within rural areas or farms flock to big cities in South Africa to look for better lives and jobs that will sustain their livelihood. The total number of beneficiaries in all projects was 97 of which 64% were males, 36% females with 31% youth. This can be attributed to the perception of Africans, South Africans in particular, that agriculture is for males and that women are expected to perform domestic activities in the household. Hence, women are not given equal opportunities as men to participate in agriculture including LRAD and PLAS projects. All things being equal, this finding is consistent with that of Antwi and Oladele (2013) who found that the majority of beneficiaries in the study of performance of LRAD projects in Ngaka Modiri Molema were men. However, 36% of females may be considered as quite good and Moloi (2008) stated that a lot has been achieved with respect to gender equality but redistribution of resources and power has not shifted the structural forces with respect to the oppression of women. Thus, there is

still a need to enhance and emphasize more on women involvement in agricultural projects such as LRAD and PLAS.

One of the reasons LRAD programmes were phased out and replaced with PLAS was because of conflict in projects with more beneficiaries. Therefore, Department of Rural Development and Land Reform took a decision to reduce or to have only one or two beneficiaries per project with the aim of eliminating conflicts as it affects productivity and stability within the projects. The findings in Table 2 show that most projects (75%) had one beneficiary while 25% had more than one beneficiary per project. The highest number of beneficiaries per project was 35. This was LRAD project and the DRDLR bought it back from the same beneficiaries with the aim to revive it as there was nothing productively happening on the farm. The ethnic groups and marital status of respondents are presented in Table 2. It indicates that majority (98%) of respondents were African blacks (Tswana, Xhosa, Sotho and Zulu tribes) and only 2% of coloureds. This is similar to the finding of Aliber (2011) which reported that majority (79%) of the population of Dr. Kenneth Kaunda District is composed of African Black and other groups share 21% of the population. The results also indicate that most (61%) respondents were married and 20, 13 and 6% for single, widowed and divorced respectively. This high percentage of married people can be attributed to the fact that most (78%) respondents were old people and family-orientated. According to Yomi-Alfred and Odefadehan (2007), the marital status of farmers could be regarded as a true reflection of their age groups.

The findings in Table 2 show the educational background of respondents. Access to education is an essential tool in promoting a sustainable economy, household and society. Education may have a long term effect or influence on agricultural productivity. It is assumed that trained people are the key to development. Therefore, it is important to provide adequate investment in education as it is widely believed that the educational level of farmers will enhance their information-seeking behaviour, type of enterprise they choose as well as adoption of agricultural innovations (Tekana & Oladele, 2011). The finding shows that 18% of respondents do not have formal education while only 15% managed tertiary education. With all things being equal, this finding is not in line with that of Antwi and Oladele (2013) which stated that 46% of LRAD beneficiaries had educational level below matric and 28% had matric while about 26% of the beneficiaries had tertiary level education. The finding of the study implies that there is high illiteracy level among beneficiaries. This may be due to financial constraints and effects of apartheid era that started after 1913; as a result, many black people in South Africa never got fair chance to be engaged in formal education. However, 28 and 39% of respondents had primary and secondary education respectively. This finding shows that majority of respondents have at least primary education. This finding is similar to that of Banmeke and Omoregbee (2009) who found out that majority of farmers have primary level of education.

The results in Table 2 also indicate the household size and number of dependents of PLAS project beneficiaries. It was found that household sizes of less than 6 members was 28% and those with 6 or more members was 72%. It was also revealed that the share of respondents with number of dependents less than 3 members was 24% of those with dependents of 3 to 6 were 17% and 59% for those with more than 6 dependents. These high household sizes may be consistent with the high illiteracy level among the respondents. Thus, residents lack knowledge with respect to the use of birth control methods which has led to high birth rates and unplanned teenage pregnancies within the District.

Table 2. Demographic characteristics of PLAS project respondents (n=54)

Age of respondents	Frequency	Percent
Less than 30	4	7.5
31- 40	9	16.7
41- 50	12	22.4
Above 50	29	54
Total	54	100
Population group of respondents	Frequency	Percent
Black african	53	98.1
Coloureds	1	1.9
Total	54	100
Marital status of respondents	Frequency	Percent
Married	33	61
Single	11	20
Widowed	7	13
Divorced	3	6
Total	54	100
Educational qualification of respondents	Frequency	Percent
None	10	18
Primary	15	28
Secondary	21	39
Tertiary	8	15
Total	54	100
Household size of respondents	Frequency	Percent
Less than 6	15	28
6 and above	39	72
Total	54	100
No. Of dependents of respondents	Frequency	Percent
Less than 3	13	24
3- 6	9	17
Above 6	32	59
Total	54	100

Source: Own calculations based on data from the study (2014).

3.2 Impact of PLAS projects on Human Capital Among Beneficiaries

Human capital status of the beneficiaries is presented in Table 3. Human capital is about empowerment through both formal and informal education. The other way of promoting education is to enhance accessibility and increase its value, by helping to open up opportunities for those who have invested in education (Carney et al., 1999). However, this may require extending access to financial capital, thereby enabling people to put their knowledge to productive use. Beneficiaries will be mostly effective when training provided is relevant to the practice in their respective PLAS projects. One way to ensure this is to adopt participatory processes of knowledge generation that build upon and complement existing local knowledge. The status of important requisite farming skills among the beneficiaries was assessed on the “before and after” basis and hereby presented.

Vocational, project management, veldt management and vegetable management skills: The results of the study (Table 3) show that participants with high vocational skills among the PLAS respondents in the study increased from 5.6% before joining the projects to 35.2% after participating in the projects. Thus before participation in PLAS projects, only 5.6% of the respondents had high vocational skills. However, after their participation in PLAS projects, 35.2% of the respondents indicated that their vocational skills are high as a result of skills training offered by the PLAS programme. Similarly, the proportion of beneficiaries whose vocational skills were low before joining the project has reduced from 94.4% to 64.8%. Project management, veldt management, grazing management and vegetable management skills showed improvement from 1.9% before the project to 25.9% after participating in the project. The beneficiaries indicated that they received some of the training in the form of workshops; however, some of the trainings were not related to the type of enterprises undertaken in their farms. Some of the beneficiaries attributed the low productivity on the farms to the lack of afore-mentioned skills. This finding indicates a lack of strategic support mechanisms needed to improve productivity and management skills of beneficiaries.

Record keeping skills: Record keeping skills is very critical for the development of both small-holder and emerging commercial farmers as it helps farmers to make informed managerial decisions regularly in terms of production, marketing, financial and human resource aspects of the farm. The results in Table 3 show the number of beneficiaries who keep farm records. It was impressive to observe that the number of beneficiaries keeping farm records improved from 5.6% before the projects to 59.3% after participating in the projects. However, the researcher observed that the standard of the farm records kept by most of the farmers was very low and may serve no useful purpose. The scenario clearly indicates the need for useful farm record keeping training of PLAS beneficiaries.

Grain, Livestock, Poultry and Piggery management skills: The efficient and effective planning, implementation and controlling of farming activities and resources are very critical for successful farming. The results in Table 3 show that grain management skills improved from 24.1% before the projects to 61.1% after beneficiaries participated in the PLAS projects. Livestock management skills also increased from 25.9% before the projects to 66.7% after participating in the PLAS projects. Poultry management skills increased from 7.4% before the projects to 25.9% after beneficiaries participated in the projects. Piggery management skills among beneficiaries also improved from 5.6% before the projects to 29.6% after beneficiaries participated in the projects.

Soil and water management skills: Soil and water management skills are also very critical to successful PLAS projects as farming depends on the availability of quality water at all times while the soil needs to be maintained in good quality for sustainable production. The results in Table 3 indicate that soil management skills among beneficiaries improved from 13% before the projects to 37% after beneficiaries participated in the PLAS projects. The findings also indicate that water management skills improved from 3.7% before the projects to 37% after beneficiaries participated in the projects. The scenario shows that more training is still needed with regard to water and soil management skills as the two indicators are critical for long-term sustainable farming.

Educational level and food security status of the respondents: The results in Table 3 indicate that educational level among beneficiaries improved from 7.4% before the projects to 13% after beneficiaries participated in the projects. However, respondents reported that most of the trainings received were through workshops and some were not relevant to the enterprises that they practised in their farms. The findings also indicate that food security among beneficiaries improved from 11.1% before the projects to 61.1% after the projects. One of the important impacts expected of the PLAS projects is to ensure food security among beneficiaries.

Knowledge of farm management, decision-making skill and creative thinking: The findings in Table 3 indicate that knowledge of farm management among respondents improved from 3.7% before the projects to 37% after the projects. Innovative and creative thinking also improved from 11.1% before the projects to 70.4% after beneficiaries participated in the projects. Decision-making skill also improved from 7.4% before the projects to 59.3% after the projects. However, the improvements of these indicators alone do not have much impact in terms of effective and efficient production in PLAS projects if not complemented by financial capital support.

Financial management skill and ability to sell product: The results in Table 3 indicate that financial management skills among respondents improved from 9.3% before the projects to 35.2% after beneficiaries participated in the projects. Financial capital is believed to be the most versatile of the five livelihood capitals as it can easily be changed into other types of capital and can be used for direct achievement of livelihood. Therefore, government needs to enhance trainings related to finance in order to improve financial management among PLAS beneficiaries. The findings also indicate that beneficiaries' ability to sell product improved from 3.7% before the projects to 50% after beneficiaries' participation in the projects.

Table 3. Impact of PLAS projects on human capital aspects among beneficiaries (n=54)

Human capital sub-variables considered Levels	Before the project		After the project	
	High F (%)	Low F (%)	High F (%)	Low F (%)
Vocational skills	3(5.6)	51 (94.4)	19 (35.2)	35 (64.8)
Project management skills	1(1.9)	53(98.1)	14(25.9)	40(74.1)
Veld management skills	1(1.9)	53(98.1)	14(25.9)	40(74.1)
Grazing management skills	1(1.9)	53(98.1)	14(25.9)	40(74.1)
Vegetable management skills	1(1.9)	53(98.1)	14(25.9)	40(74.1)
Grain management skills	13(24.1)	41(75.9)	33(61.1)	21(38.9)
Livestock management skills	14(25.9)	40(74.1)	36(66.7)	18(33.3)
Poultry management skills	4(7.4)	50(92.6)	14(25.9)	40(74.1)
Piggery management skills	3(5.6)	51(94.4)	16(29.6)	38(70.4)
Disease treatment skills	21(38.9)	33(61.1)	47(87)	7(13)
Water management skills	2(3.7)	52(96.3)	20(37)	34(63)
Soil management skills	7(13)	47(87)	20(37)	34(63)
Food security	6(11.1)	48(88.9)	33(61.1)	21(38.9)
Level of education	4(7.4)	50(92.6)	7(13)	47(87)
Innovative and creative thinking	6(11.1)	48(88.9)	38(70.4)	16(29.6)
Knowledge of farm management	2(3.7)	52(96.3)	20(37)	34(63)
Decision-making skills	4(7.4)	50(92.6)	32(59.3)	22(40.7)
Record keeping skills	3(5.6)	51(94.4)	32(59.3)	22(40.7)
Ability to sell product	2(3.7)	52(96.3)	27(50)	27(50)
Financial management skills	5 (9.3)	49 (90.7)	19 (35.2)	35 (64.8)

Source: Own calculations based on data from the study (2014).

3.3 Wilcoxon Sign-Rank Test Results on Human Capital Impact Among Beneficiaries

The final Test Statistics table (Table 4), shows whether the changes in participants due to their participation in PLAS projects, led overall to a statistically significant difference in human capital variables among them. The Asymptotic Significance (2-tailed) values are the p values for the test. The Z statistic is normally used to report Wilcoxon signed-ranks test. The results as presented in Table 4 show that the p values of all 21 variables considered under human capital were statistically significant indicating that significant difference exists in human capital among respondents before and after participation in PLAS projects (H_{alt}). The results of most of the Mean Ranks indicate that human capital **after** are likely mostly higher than **before**. This implies that significant number of the respondents have acquired various human capital skills after their participation in the PLAS projects. For example, the results of the Mean Ranks (8.50) for vocational skills indicate that the participants with vocational skills **after** participation in the PLAS projects are likely mostly higher than **before**. Sixteen respondents (positive ranks) acquired vocational skills after participation in PLAS projects while 37 (ties) of them did not experienced any such change. The p value of 0.000 indicates that significant difference exists in vocational skills among respondents before participation in the PLAS projects and after participation in the PLAS projects.

Table 4. Wilcoxon Sign-Rank Sum Test results on human capital (n=54)

Human Capital		N	Mean Rank	Sum of Ranks	Z	P
Vocational skills Before and after the project	Negative Ranks	0	0.00	0.00	-4.00	0.000***
	Positive Ranks	16	8.50	135.00		
	Ties	37				
	Total	54				
Extension services Before and after the project	Negative Ranks	0	0.00	0.00	-6.083	0.000***
	Positive Ranks	37	19.00	703.00		
	Ties	16				
	Total	54				
Technical training Before and after the project	Negative Ranks	1	18.00	18.00	-3.273	0.000***
	Positive Ranks	17	9.00	153.00		
	Ties	36				
	Total	54				
Project management skills Before and after the project	Negative Ranks	1	7.50	7.50	-3.207	0.000***
	Positive Ranks	13	7.50	97.50		
	Ties	40				
	Total	54				
Veld management skills Before and after the project	Negative Ranks	0	0.00	0.00	-4.796	0.000***
	Positive Ranks	23	12.00	276.00		
	Ties	31				
	Total	54				
Grazing management skills Before and after the project	Negative Ranks	0	0.00	0.00	-4.583	0.000***
	Positive Ranks	21	11.00	231.00		
	Ties	33				
	Total	54				
Vegetable management skills Before and after the project	Negative Ranks	0	0.00	0.00	-2.828	0.005*
	Positive Ranks	8	4.50	36.00		
	Ties	46				
	Total	54				
Grain management skills Before and after the project	Negative Ranks	0	0.00	0.00	-4.472	0.000***
	Positive Ranks	20	10.50	210.00		
	Ties	34				
	Total	54				
Livestock management skills Before and after the project	Negative Ranks	0	0.00	0.00	-4.690	0.000***
	Positive Ranks	22	11.50	253.00		
	Ties	32				
	Total	54				
Poultry management skills Before and after the project	Negative Ranks	0	0.00	0.00	-4.690	0.000***
	Positive Ranks	10	5.50	55.00		
	Ties	44				
	Total	54				
Piggery management skills Before and after the project	Negative Ranks	0	0.00	0.00	-3.606	0.000***
	Positive Ranks	13	7.00	91.00		
	Ties	41				
	Total	54				

	Total	54				
Veld management skills	Negative Ranks	0	0.00	0.00	-4.025	0.000***
Before and after the project	Positive Ranks	18	9.50	171.00		
	Ties	36				
	Total	54				
Disease treatment skills	Negative Ranks	0	0.00	0.00	-5.099	0.000***
Before and after the project	Positive Ranks	26	13.50	351.00		
	Ties	28				
	Total	54				
Water management skills	Negative Ranks	1	0.00	0.00	-4.025	0.000***
Before and after the project	Positive Ranks	19	7.00	91.00		
	Ties	34				
	Total	54				
Soil management skills	Negative Ranks	0	0.00	0.00	-6.606	0.000***
Before and after the project	Positive Ranks	13	7.00	91.00		
	Ties	41				
	Total	54				
Food security	Negative Ranks	4	18.00	72.00	-4.564	0.000***
Before and after the project	Positive Ranks	31	18.00	558.00		
	Ties	19				
	Total	54				
Level of education	Negative Ranks	0	0.00	0.00	-1.732	0.083**
Before and after the project	Positive Ranks	3	2.00	6.00		
	Ties	51				
	Total	54				
Innovative and creative thinking	Negative Ranks	0	0.00	0.00	-5.657	0.000***
Before and after the project	Positive Ranks	32	16.50	528.00		
	Ties	22				
	Total	54				
Knowledge of farm management	Negative Ranks	0	0.00	0.00	-5.578	0.000***
Before and after the project	Positive Ranks	32	16.50	528.00		
	Ties	22				
	Total	54				
Decision making skills	Negative Ranks	0	0.00	0.00	-5.292	0.000***
Before and after the project	Positive Ranks	28	14.50	406.00		
	Ties	26				
	Total	54				
Record keeping skills	Negative Ranks	0	.00	0.00	-5.385	0.000***
Before and after the project	Positive Ranks	29	15.00	435.00		
	Ties	25				
	Total	54				

Source: Own calculations based on data from the study (2014).

4. Conclusion and Recommendations

The results of Wilcoxon Signed-rank Sum Test of human capital livelihood before and after PLAS projects

among farmers show that significant difference exists in human capital among the beneficiaries on “before and after” project basis. Thus human capital among the participants significantly increased after participation in the PLAS projects. Based on the findings of the study, it is recommended that:

Post-settlement skills training support needs to be a pre-requisite for all PLAS projects in order to maintain productivity at optimum level. The support should be informed by the project needs.

Government and NGOs need to be more involved in helping farmers through training programmes in order to reduce illiteracy level among beneficiaries. However, beneficiaries should be given practical training based on the required farming skills informed by the agricultural enterprise in their projects to ensure the relevance of the training to attain intended impact. Thus, training should not be generalized.

Government also needs a stronger mechanism in selecting committed reliable Strategic Partners and Mentors in order to ensure that beneficiaries gain from their real expertise and experience about the industry. This will help to enhance productivity, confidence and knowledge and promote independency of beneficiaries in managing their projects on their own when contracts of Mentors/Strategic partners expire.

Government needs to compliment human capital development with financial support and infrastructural development in PLAS projects as most projects do not have the required infrastructure for their farming operation.

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